PCM-9581

Intel Pentium M SBC with Audio, VGA, LCD

User Manual

Copyright

This document is copyrighted, © 2006. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, nor for any infringements upon the rights of third parties that may result from such use.

Acknowledgements

Award is a trademark of Award Software International, Inc.

VIA is a trademark of VIA Technologies, Inc.

IBM, PC/AT, PS/2 and VGA are trademarks of International Business Machines Corporation.

Intel and Pentium are trademarks of Intel Corporation.

Microsoft Windows® is a registered trademark of Microsoft Corp.

RTL is a trademark of Realtek Semi-Conductor Co., Ltd.

ESS is a trademark of ESS Technology, Inc.

UMC is a trademark of United Microelectronics Corporation.

SMI is a trademark of Silicon Motion, Inc.

Creative is a trademark of Creative Technology LTD.

CHRONTEL is a trademark of Chrontel Inc.

All other product names or trademarks are properties of their respective owners.

For more information on this and other Advantech products, please visit our websites at: **http://www.advantech.com**

http://www.advantech.com/eplatform

For technical support and service, please visit our support website at:
http://www.advantech.com/support

This manual is for the PCM-9581

Part No. 2006958111 2nd Edition

Jan. 2007

Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

- 1 PCM-9581 all-in-one single board computer
- 1 CD disk for utility and drivers
- 1 startup manual
- 1 Mini Jumper*10 PCS Package (p/n: 9689000002)
- 1 ATX power cable (p/n:1700000265)

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Model No. List	Description
PCM-9581F-00A1	Socket 478 Pentium M SBC w/Audio, VGA, LCD
PCM-9581F-S0A1	Socket 478 Pentium M SBC w/Gigabit, Audio, VGA, LCD
PCM-9581FG-00A1	Pentium M 1.1G SBC w/Audio, VGA, LCD
PCM-9581FG-S0A1	Pentium M 1.1G SBC w/Gigabit Audio, VGA, LCD

FCC

This device complies with the requirements in part 15 of the FCC rules: Operation is subject to the following two conditions:

1.This device may not cause harmful interference.

2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this device in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense. The user is advised that any equipment changes or modifications not expressly approved by the party responsible for compliance would void the compliance to FCC regulations and therefore, the user's authority to operate the equipment.

Caution!

There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer’s instructions.

Additional Information and Assistance

1. Visit the Advantech web site at **www.advantech.com** where you can find the latest information about the product.

2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version, application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

Contents

CHAPTER 1

General Information

This chapter gives background information on the PCM-9581. Sections include:

- Introduction
- Features
- Specifications
- Board layout and dimensions

Chapter 1 Introduction

1.1 Introduction

The PCM-9581 is a solid, general purpose single board computer (SBC) to satisfy various industrial and multimedia applications. With socket 478 or onboard Pentium M 1.1 G, 1.6G(optional), Gigabit Ethernet, USB 2.0, ECC DDR memory, 2 channel 36-bit or 48-bit (optional) LVDS, TV-out function and Mini-PCI interface, the PCM-9581's design is based on the 5.25" form factor that provides PCI module expansion.
This compact (only 5.75" x 8") unit offers on-board I/O features including, four serial ports, one multi-mode parallel (ECP/EPP/SPP) port, 4 USB (Universal Serial Bus) 1.1/2.0 compliant ports, and optional floppy drive controller, a keyboard/PS/2 mouse interface, and a 8-bit GPIO(general purpose input/output) connector. The PCM-9581 features power management APM 1.2 or ACPI1.0b 2.0 to minimize power consumption. It also provides a convenient connector layout for easy assembly, more efficient cable connections and better overall embedded system integration.

1.2 Features

- Socket 479/Onboard Intel Pentium M 1.1G, 1.6G (optional)
- Support ECC DDR 128MB to 2GB
- With Vcore 2 phase design for more stable system design
- Support 1000Base-T Ethernet
- Support 4 port Host USB2.0
- Support dual display CRT and LVDS/DVI interface
- Support Audio and CD-in interface

1.3 Specifications

Standard SBC Functions

- **CPU:** Supports onboard Intel® Pentium® M and Celeron® M or socket478
- **BIOS**: Award 256 KB Flash memory

- **System memory:** Two 184-pin DIMM sockets, support ECC Double Data Rate (DDR)128 MB to 2 GB, accepts 128/256/512/1000 MB DDR200/266 DRAM.
- **System chipset:** Intel 855GME GMCH/ICH4 chipset 400Mhz FSB
- **2nd cache memory:** 1 MB on the Pentium M processor
- **Enhanced IDE interface:** Two channels supports up to four EIDE devices. BIOS auto-detect, PIO Mode 3 or Mode 4, UDMA 100 transfer. Primary IDE support up to UDMA 66/100 mode
- **FDD interface:** Supports one FDD (optional)
- **Serial ports:** Three serial RS-232 ports, one serial RS-232/422/485 ports
- **Parallel port:** One parallel port, supports SPP/EPP/ECP mode
- **Keyboard/mouse connector:** Supports standard PS/2 keyboard and a PS/2 mouse
- **Power management:** Supports power saving modes including Normal/ Standby/Suspend modes. APM 1.2/ACPI compliant
- **Watchdog timer**: 255-level timer intervals, from 15sec to 14835 sec, setup by software, jumperless selection, generates system reset
- **USB**: Four USB 2.0 compliant host ports
- **IrDA:** 115 Kbps, IrDA 1.1 compliant
- **GPIO:** 8-bit general purpose input/output
- **Expansion:** Supports PCI2.2 with 32-bit/33 MHz slot and Mini-PCI interface.

Solid State Disk

- Supports one 50-pin socket for CFC type I/II

VGA/LCD Interface

- **Chipset:** Intel 855GME, supports a single 1.5V accelerated Graphic port interface
- **Frame buffer:** Supports 1 MB to 8 MB frame buffer with system memory
- **Interface:** 4x AGP VGA/LVDS interface
- **Display mode:** CRT Modes: up to 1600 x 1200 at 85-Hz and 2048 x 1536 at 75-Hz

- **LCD mode:** Dual channel LVDS panel support up to UXGA panel resolution with frequency range from 25 MHz to 112 MHz
- **LVDS:** Support 2 channel (36-bit) LVDS LCD panel, optional up to 48-bit LVDS LCD display

TV-Out/DVI

- **Chipset:** Chrontel CH7009
- Supports DVI and TV output
- Support NTSC and PAL formats
- Supports composite, s-video or RGB output
- DVI supports UXGA resolution display, TV output support graphic resolutions up to 1024 x 768 pixels

Ethernet interface

- **Chipset:**
- Intel 82551ER [Intel 82551QM optional] (PCM-9581F)
- Intel 82540EM (PCM-9581FG)
- **Ethernet interface:**
- IEEE 802.3u 100BASE-T Fast Ethernet compatible (PCM-9581F)
- IEEE 802.3z/ab 1000 BASE-T Gigabit Ethernet compatible (PCM-9581FG)
- **I/O address switchless setting**
- **Built-in boot ROM**

Audio Function (optional)

- **Chipset:** Intel 82801DB (ICH4)
- **Audio controller:** AC’97 3D surround stereo sound
- Supports Speaker out, CD-input, Line-in, Line-out, Microphone

Mechanical and Environmental

- **Dimensions:** (L x W)203 x 146 mm (8" x 5.75")
- **Power supply Voltage:**ATX, with Vcore 2 phase, +5V power only can work
- **Power Requirement:** (Pentium M 1.6G, 25M DDR 300)

  Max: +5 V @ 3.8 A, +12 @ 0.4 A

  Average: +5 V @ 3.22 A, +12 V @ 0.2 A
- **Operating temperature:**0 ~ 60° C (32~140° F)

- **Operating Humidity:**0% ~ 90% Relative Humidity, non-condensing
- **Weight:** 0.85 kg (weight of total package)

1.4 Board layout: dimensions

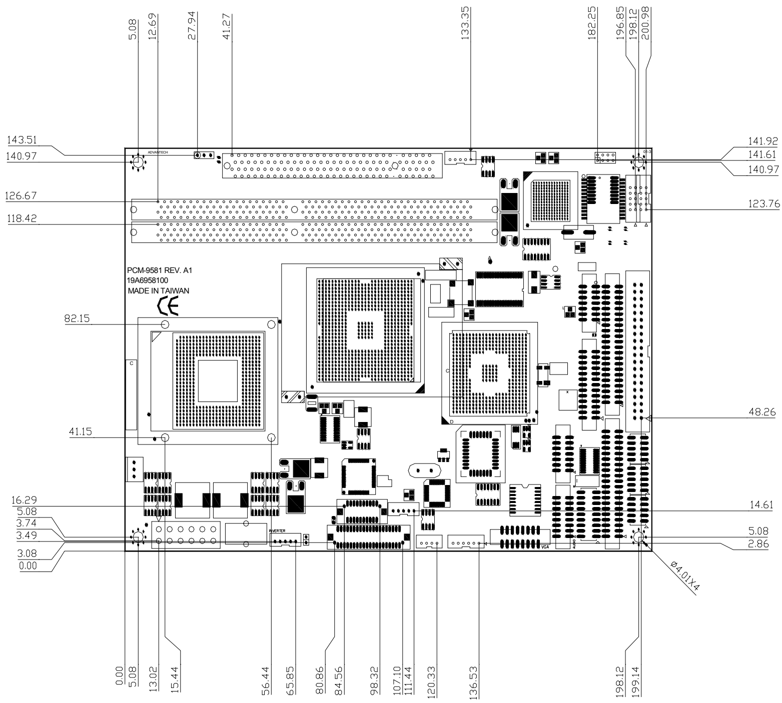


Figure 1.1: Board layout: dimensions (component side)

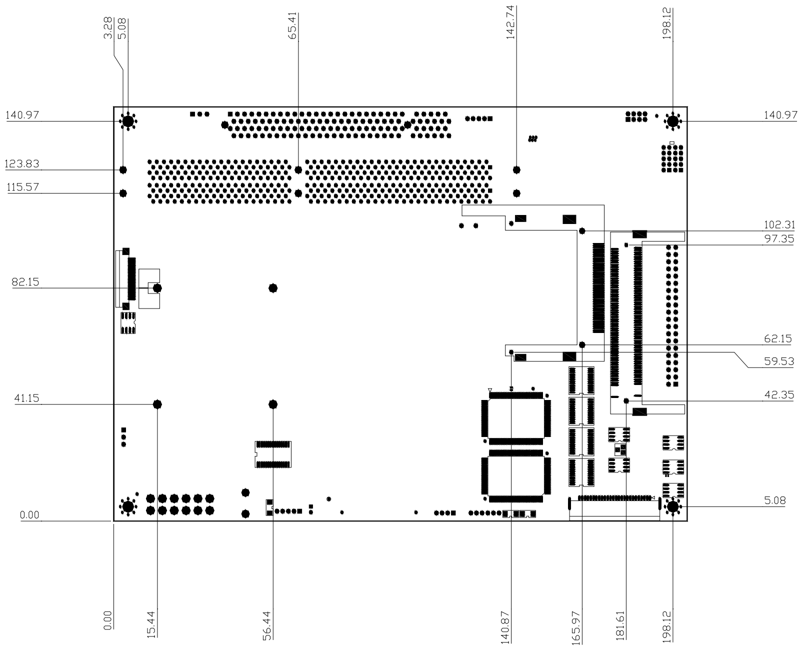


Figure 1.2: Board layout: dimensions (solder side)

CHAPTER 2

Installation

This chapter explains the setup procedures of PCM-9581 hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all safety precautions before you begin the installation procedure.

Chapter 2 Installation

2.1 Jumpers

The PCM-9581 has a number of jumpers that allow you to configure your system to suit your application. The table below lists the functions of the various jumpers.

Table 2.1: Jumpers

Label	Function
JP1	PCI VIO Select
JP2	RS-232/422/485 Select
JP3	CMOS Charge & Discharge
JP4	LCD Panel Voltage Select

2.1.1 Jumpers setting drawing

Table 2.2: PCI VIO Select (JP1)

PIN	Function
1-2	VCC
2-3	VCC3
Default	NULL*

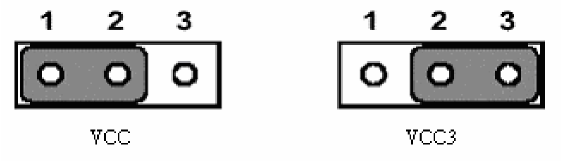
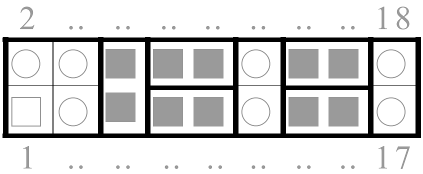


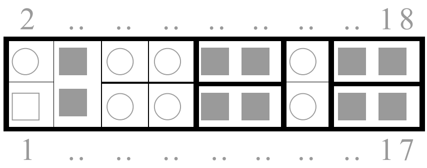
Table 2.3: RS-232/422/485 Select (JP2)

PINS	RS-232	RS-422	RS-485
1,2	Open	Open	Close
3,4	Open	Close	Open
5,6	Close	Open	Open
7,9	Close	Open	Open
8,10	Close	Open	Open
9,11	Open	Close	Close
10,12	Open	Close	Close
13,15	Close	Open	Open
14,16	Close	Open	Open
15,17	Open	Close	Close
16,18	Open	Close	Close

RS-232



RS-422



RS-485

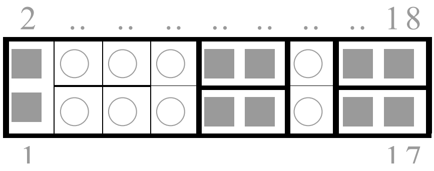


Table 2.4: CMOS Charge & Discharge (JP3)	
PIN	**Function**
1-2	OFF: Charge*
1-2	ON: Discharge

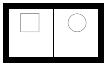




Table 2.5: LCD Panel Voltage Select (JP4)	
PIN	**Function**
1-2	VCC
2-3	VCC3*





2.2 Connectors

On-board connectors link the PCM-9581 to external devices such as hard disk drives, a keyboard, or floppy drives. The table below lists the function of each of the board's connectors.

Table 2.6: Connectors

Label	Function
CN1	LAN LED
CN2	GigaLAN Connector
CN3	Power/LED Header
CN4	LPT Connector
CN5	IDE 44-Pin Connector
CN6	IDE 40-Pin Connector
CN8	FDD FPC 26 Pin Connector
CN7	DF13 20 Pin TMDS Connector
CN9	GPIO 14Pin Connector
CN10	CPU FAN Connector
CN11	COM1~4 Connector
CN12	TV-OUT Connector
CN13	CRT Connector
CN14	Audio Connector
CN15	ATX Power Connector
CN16	DF13 40Pin LVDS Connector
CN17	Inverter Connector
CN18	CD-IN Connector
CN19	PS2 KB/MS Connector
CN20	Compact Flash Connector
CN22	Mini PCI Connector
CN23	10/100 M LAN Connector
CN24	SIR Connector
CN25	USB 0,1 Connector
CN26	USB 2,3 Connector
CN27	USB 4,5 Connector
CN30	Added Card Power Connector

2.3 Locating jumpers and Connectors

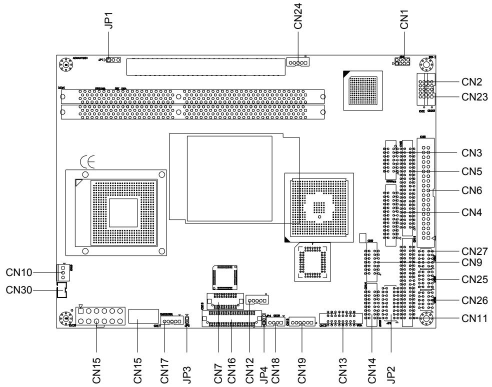


Figure 2.1: Jumper & Connector (component side)

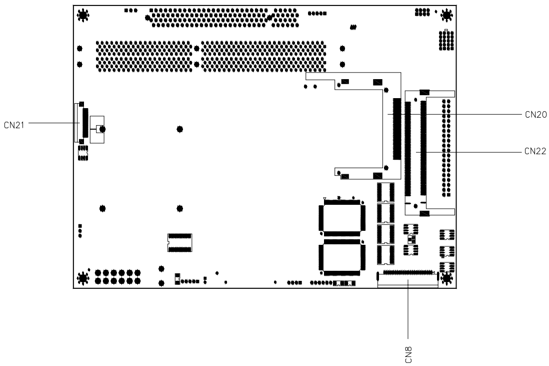
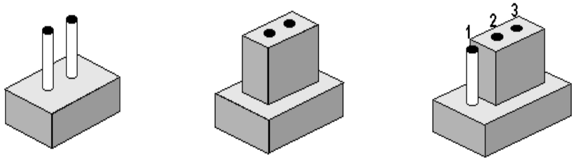


Figure 2.2: Jumper & Connector (solder side)

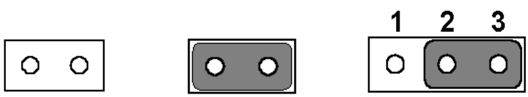
2.4 Setting Jumpers

You may configure your card to match the needs of your application by setting jumpers. A jumper is a metal bridge used to close an electric circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper, you connect the pins with the clip. To “open” a jumper, you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2, or 2 and 3.



open   closed   closed 2-3

The jumper settings are schematically depicted in this manual as follows:.



open   closed   closed 2-3

A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

Generally, you simply need a standard cable to make most connections.

2.5 Clear CMOS (JP3)

Warning! *To avoid damaging the computer, always turn off the power supply before setting "Clear CMOS." Before turning on the power supply, set the jumper back to "3.0 V Battery On."*

This jumper is used to erase CMOS data and reset system BIOS information.

The procedure for clearing CMOS is:

1. Turn off the system.
2. Push JP3
3. Turn on the system. The BIOS is now reset to its default setting

2.6 Installing DIMMs

The procedure for installing DIMMs is described below. Please follow these steps carefully. The number of pins are different on either side of the breaks, so the module can only fit in one way. DIMM modules have different pin contacts on each side, and therefore have a higher pin density.

1. Make sure that the two handles of the DIMM socket are in the "open" position. i.e. The handles remain leaning outward.
2. Slowly slide the DIMM module along the plastic guides on both ends of the socket.
3. Press the DIMM module right down into the socket, until you hear a click. This is when the two handles have automatically locked the memory module into the correct position of the socket.

To **remove** the memory module, just push both handles outward, and the module will be ejected from the socket.

2.7 IDE, CDROM hard drive connector (CN5, CN6)

The PCM-9581 provides 2 IDE channels which you can attach up to four Enhanced Integrated Device Electronics hard disk drives or CDROM to the PCM-9581's internal controller. The PCM-9581's IDE controller uses a PCI interface. This advanced IDE controller supports faster data transfer, PIO mode 3, mode 4 and UDMA/100. The secondary channel supports UDMA/33 only.

2.7.1 Connecting the hard drive

Connecting drives is done in a daisy-chain fashion. It requires one of two cables (not included in this package), depending on the drive size. 1.8" and 2.5" drives need a 1 x 44-pin to 2 x 44-pin flat-cable connector. 3.5" drives use a 1 x 44-pin to 2 x 40-pin connector.

Wire number 1 on the cable is red or blue, and the other wires are gray.

1. Connect one end of the cable to CN5, CN6. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
2. Plug the other end of the cable into the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector.)

If desired, connect a second drive as described above.

Unlike floppy drives, IDE hard drives can connect to either end of the cable. If you install two drives, you will need to set one as the master and one as the slave by using jumpers on the drives. If you install only one drive, set it as the master.

2.8 Solid State Disk

The PCM-9581 provides a CompactFlash™ card socket and DiskOnChip socket for Solid state disk solutions.

2.8.1 CompactFlash (CN20)

The CompactFlash card shares a secondary IDE channel which can be enabled/disabled via the BIOS settings.

2.9 Floppy drive connector (CN8)

You can attach up to two floppy drives to the PCM-9581's on-board controller. This is useful for notebooks with 26 pin slim-FDD cable (part no:1906000001), for example.

You can use any combination of 5.25"(360 KB and 1.2MB) and/or 3.5"(720 KB, 1.44MB, and 2.88 MB) drives. A 26 pin slim-FDD cable, 26-34pin daisy-chain drive cable converter, and appropriate 34 pin flat cable are required.

2.9.1 Connecting the floppy drive

1. Plug the 26-pin slim FDD-cable connector into CN8 of PCM-9581 board and the 26-34pin daisy-chain drive cable converter. Make sure that the red wire corresponds to pin one on the connector.
2. Plug the 34-pin flat-cable connector into 26-34pin daisy-chain drive cable connector. Make sure that the red-wire corresponds to pin one on the connector.
3. Attach the appropriate connector at the end of the cable to the floppy drive(s). You can use only one connector in the set. The set on the end (after the twist in the cable) connects to A: drive. The set in the middle connects to the B: drive.
4. If you are connecting a 5.25" floppy drive, line up the slot in the PCB (printed circuit board) with the blocked-off part of the cable connector.

If you are connecting a 3.5" floppy drive, you may have trouble determining which pin is number one. Look for a number printed on the circuit board indicating pin number one. In addition, the connector on the floppy drive may have a slot. When the slot is up, pin number one should be on the right. Check the documentation that came with the drive for more information.

If you desire, connect the B: drive to the connectors in the middle of the cable as described above.

In case you need to make your own cable, you can find the pin assignments for the board's connector in Appendix C.

2.10 Parallel port connector (CN4)

Normally, the parallel port is used to connect the card to a printer. The PCM-9584 includes a multi-mode (ECP/EPP/SPP) parallel port accessed via CN4 and a 26-pin flat-cable connector. You will need an adapter cable if you use a traditional DB-25 connector. The adapter cable has a 26-pin connector on one end, and a DB-25 connector on the other.

The parallel port is designated as LPT1, and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup.

The parallel port interrupt channel is designated to be IRQ7.

You can select ECP/EPP/SPP DMA channel via BIOS setup.

2.11 Keyboard and PS/2 mouse connector (CN19)

The PCM-9581 board provides a keyboard connector that supports both a keyboard and a PS/2 style mouse. In most cases, especially in embedded applications, a keyboard is not used. If the keyboard is not present, the standard PC/AT BIOS will report an error or fail during power-on self-test (POST) after a reset. The PCM-9581's BIOS standard setup menu allows you to select "All, But Keyboard" under the "Halt On" selection. This allows no-keyboard operation in embedded system applications, without the system halting under POST.

2.12 Front Panel Connector (CN3)

Next, you may want to install external switches to monitor and control the PCM-9581. These features are optional: install them only if you need them. The Front Panel connector (CN3) is a 14-pin male, dual in-line header. It provides connections for a hard disk access indicator, LAN Act., LAN Link, hardware reset, ATX power ON/OFF switch connector, and power on indicator.

2.12.1 Power & HDD LED (pin 1-4 of CN3)

The HDD LED indicator for hard disk access is an active low signal (24 mA sink rate). Power supply activity LED indicator.

2.12.2 Reset switch (pin 13-14 of CN3)

If you install a reset switch, it should be an open single pole switch. Momentarily pressing the switch will activate a reset. The switch should be rated for 10 mA, 5 V.

2.13 Power connectors (CN10, CN15, CN30)

2.13.1 ATX power connector, +5V (CN15)

Supplies main power to the PCM-9581 (+5V) and to devices that require.

2.13.2 CPU Fan power supply connector (CN10)

Provides power supply +12V to CPU cooling fan, and fan speed detects signal input.

2.13.3 Added Card Power connector (CN30)

Provides power supply -12 V to PCI slot for some devices.

2.14 ATX power ON/OFF switch con. pin 11-12 of CN3

2.14.1 ATX feature (CN15) & soft power switch (CN3)

The PCM-9581 can support an advanced soft power switch function, if an ATX power supply is used. To enable the soft power switch function connect the power on/off button to CN3. (A momentary type of button should be used.)

Important! *Make sure that the ATX power supply can take at least a 10 mA load on the 5 V standby lead (5 VSB). If not, you may have difficulty powering on your system.*

2.15 Audio AC'97 Link interfaces (CN14)

The PCM-9581 is equipped with a high quality audio interface, which provides 16-bit CD-quality recording and playback as well as OPL3 compatible FM music. It is supported by all major operating systems and is completely compatible with Sound Blaster Pro.

2.15.1 Audio connector (CN14)

The PCM-9581 provides all major audio signals on a 16-pin flat-cable connector, CN14. The audio signals include Microphone in (mono), Line in (stereo), Line out (stereo) and Speaker out (stereo). You will need an adapter cable if you use traditional jack connectors for these audio signals.

2.15.2 CD audio-in connector (CN18)

All CD-ROM drives can provide analog audio signal output when used as a music CD player. The CN18 on PCM-9581 is a connector to input CD

audio signal into the audio controller. The audio cable of your CD-ROM drive will be used to connect to CN18.

2.16 COM port connector (CN11)

The PCM-9581 provides four RS-232 serial ports (COM1,3,4:RS-232, COM2: RS-232/422/485) in one COM port connector. The COM port connector is a 40-pin, DF13A-40DP-1.25V (Hirose Electric Co., Ltd.). It provides connections for serial devices (a mouse, etc.) or a communication network. You can find the pin assignments for the COM port connector in Appendix C. COM2 can be configured to operate in RS-232,RS-422, or RS-485 mode. This is done via JP2.

2.17 VGA/LVDS interface connections (CN13, CN16, CN7)

The PCM-9581's AGP SVGA interface can drive conventional CRT displays and is capable of driving a wide range of LVDS flat panel displays. The board has three connectors to support these displays: one for standard CRT VGA monitors, one for LVDS type LCD panels and one for DVI type LCD panels.

2.17.1 CRT display connector (CN13)

CN13 is a 16-pin, dual-inline header used for conventional CRT displays. A simple one-to-one adapter can be used to match CN13 to a standard 15-pin D-SUB connector commonly used for VGA. Users can drive a standard progressive scan analog monitor with pixel resolution up to 1600 x 1200 at 85 Hz and up to 2048 x 1536 at 75 Hz. Pin assignments for CRT display connector CN13 are detailed in Appendix C.

2.17.2 LVDS LCD panel connector (CN16)

The PCM-9581 uses the Intel 855 GME chipset that supports single- or dual-channel LVDS panel up to UXGA panel resolution with frequency range from 15 MHz to 112 MHz.

The PCM-9581 supports single or dual-channel LVDS panels up to UXGA panel resolution with frequency range from 25MHz to 112MHz. The display mode can be 2 channel (2 x 18bit) LVDS LCD panel displays, or optional (2 x 24bit) LVDS LCD panel display. Users can connector to either an 18, 24, 36 or 48bit LVDS LCD with CN16.

2.17.3 DVI LCD panel connector (CN7)

Digital Visual Interface (DVI) is the standard interface for high-performance connection between PCs and Flat Panel Displays, Digital CRT displays, Projectors, and HDTV. The PCM-9581 is able to drive a DVI connector display at a pixel resolution up to 1600 x 1200 at 85Hz.

Panel type and Resolution mode selection.

Customer can select display type and boot number from BIOS menu selection.

2.18 TV-out interface (CN12)

The PCM-9581 board provides TV-out function via CN12. This consists of a 5-pin wafer box header. Output supports composite video, S-video and SCART(RBG). TV-out generators use both NTSC and PAL formats.It supports up to 1024 by 768 with full vertical and horizontal underscan capability.

To set up your video interface run the appropriate installation program located on the utility disk.

2.19 Ethernet configuration (CN2, CN23)

The PCM-9581 is equipped with a high performance 32-bit PCI-bus Ethernet interface which is fully compliant with IEEE 802.3U 10/100Mbps CSMA/CD standards. It is supported by all major network operating systems.

The medium type can be configured via the RSET82540.EXE or RSET82559.EXE program included on the utility disk. (See Chapter 3 for detailed information.)

2.19.1 100Base-T connector (CN23, PCM-9581F)

10/100Base-T connects to the PCM-9581F via an adapter cable to a 10-pin polarized header (CN23).

2.19.2 1000Base-T connector (CN2, PCM-9581FG)

10/100/1000 Base-T connects to the PCM-9581FG via an adapter cable to a 10-pin polarized header (CN2).

2.19.3 Network boot

The Network Boot feature can be utilized by incorporating the Boot ROM image files for the appropriate network operating system. The Boot

ROM BIOS files are included in the system BIOS, which is on the utility CD disc.

2.20 USB connectors (CN25,CN26,CN27)

The PCM-9581 board provides up to six USB (Universal Serial Bus) 1.1/ 2.0 ports. This gives complete Plug and Play, and hot attach/detach for up to 127 external devices. The USB interfaces comply with USB specification Rev. 1.1, and are fuse protected.

The PCM-9581 support three 5 x2 pin header connector for USB0,1 (CN25), USB2,3(CN26), USB4,5(CN27). You will need an USB cable if you use USB connectors. The USB interfaces can be disabled in the system BIOS setup.

CHAPTER 3

Software Configuration

This chapter details the software configuration information. It shows you how to configure the card to match your application requirements. The AWARD System BIOS is covered in Chapter 4.

Sections include:

- Introduction
- Connections for standard LCDs
- Ethernet interface configuration.

Chapter 3 Software Configuration

3.1 Introduction

The PCM-9581 system BIOS and custom drivers are located in a 256 Kbyte, Flash ROM device, designated U6. A single Flash chip holds the system BIOS, VGA BIOS and network Boot ROM image. The display can be configured via CMOS settings. This method minimizes the number of chips and difficulty of configuration. To set different types of LCD panels, please choose “panel type” from the “integrated peripherals” menu in CMOS setup.

3.2 Connections to Three Standard LCDs

The following tables illustrate typical LCD connection pinouts for the PCM-9581.

3.2.1 LG LM150X06 (1024x768(16 colors) LVDS LCD)

Table 3.1: Connections to LCD / Flat Panel (CN16)

LCD Connector		Flat Panel Connector	
Unipac-UB 104S01		**DF-13 40P**	
Pin	**Signal**	**Pin**	**Signal**
1	Vcc	1	3.3V
2	Vcc	2	3.3V
3	GND	3	GND
4	GND	4	GND
5	RxIN0-	7	LVDS_YAM0R
6	RxIN0+	9	LVDS_YAP0R
7	GND	11	GND
8	RxIN1-	13	LVDS_YAM1R
9	RxIN1+	15	LVDS_YAP1R
10	GND	17	GND
11	RxIN2-	19	LVDS_YAM2R
12	RxIN2+	21	LVDS_YAP2R
13	GND	23	GND
14	CKIN-	25	LVDS-CLKAMR
15	CKIN+	27	LVDS-CLKAPR
16	GND	29	GND
17	NC		
18	NC		
19	GND	33	GND
20	GND	34	GND

* LCD connector type: HRS DF 19K-20P-1H or compatible

CHAPTER 4

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

Chapter 4 Award BIOS Setup

4.1 System test and initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

`press <F1> to RESUME`

Write down the message and press the F1 key to continue the bootup sequence.

4.1.1 System configuration verification

These routines check the current system configuration against the values stored in the board's CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The PCM-9581 Series' CMOS memory has an integral lithium battery backup. The battery backup should last ten years in normal service, but when it finally runs down, you will need to replace the complete unit.

4.2 Award BIOS setup

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

4.2.1 Entering setup

Power on the computer and press <Del> immediately. This will allow you to enter Setup.



Figure 4.1: BIOS setup program initial screen

4.2.2 Standard CMOS Features setup

When you choose the Standard CMOS Features option from the Initial Setup Screen menu, the screen shown below is displayed. This standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy drive and display. Once a field is highlighted, on-line help information is displayed in the left bottom of the Menu screen.

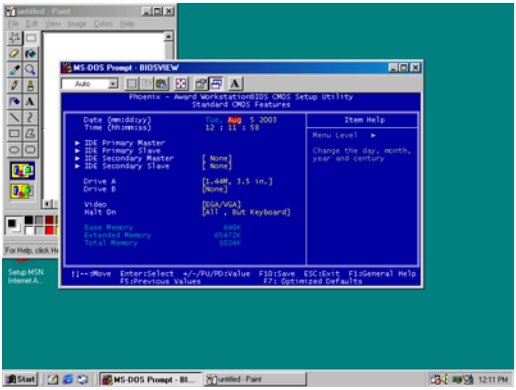


Figure 4.2: CMOS Features setup

4.2.3 Advanced BIOS Features setup

By choosing the Advanced BIOS Features Setup option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-9581 Series.

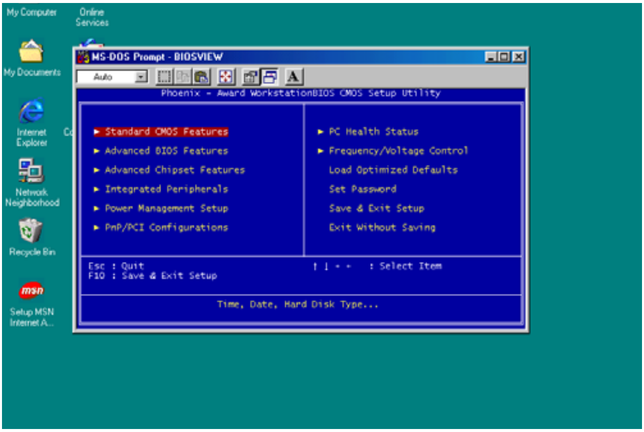


Figure 4.3: Advanced BIOS Features setup

4.2.4 Advanced Chipset Features setup

By choosing the Advanced Chipset Features option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-9581 Series.

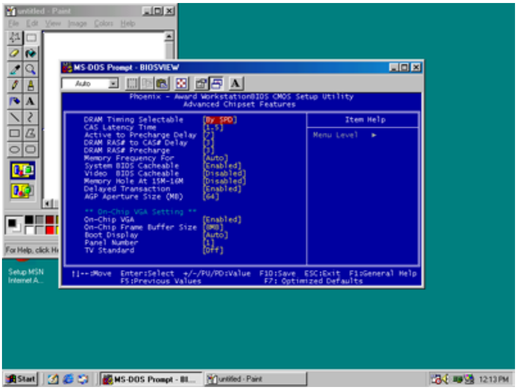


Figure 4.4: Advanced Chipset Features setup

4.2.5 Integrated Peripherals

Choosing the Integrated Peripherals option from the Initial Setup Screen menu should produce the screen below. Here we see the manufacturer's default values for the PCM-9581 Series.

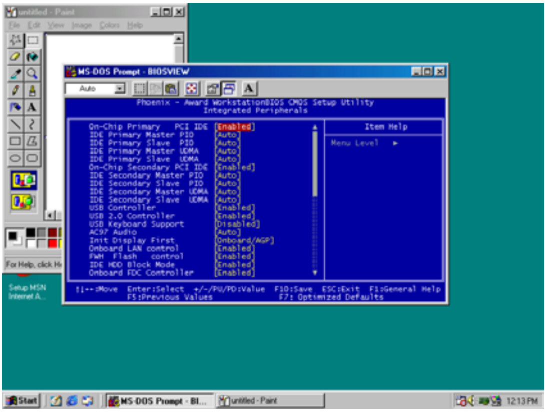


Figure 4.5: Integrated Peripherals

4.2.6 Power Management Setup

By choosing the Power Management Setup option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-9581 Series.

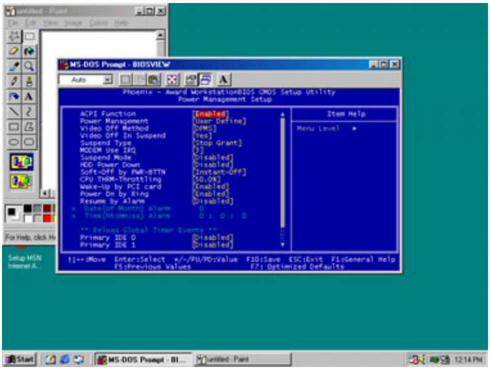


Figure 4.6: Power Management Setup

4.2.7 PnP/PCI Configurations

By choosing the PnP/PCI Configurations option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-9581 Series.

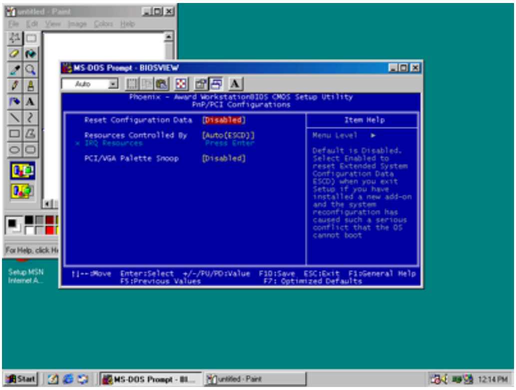


Figure 4.7: PnP/PCI Configurations

4.2.8 PC Health Status

The PC Health Status option displays information such as CPU and motherboard temperatures, fan speeds, and core voltage.

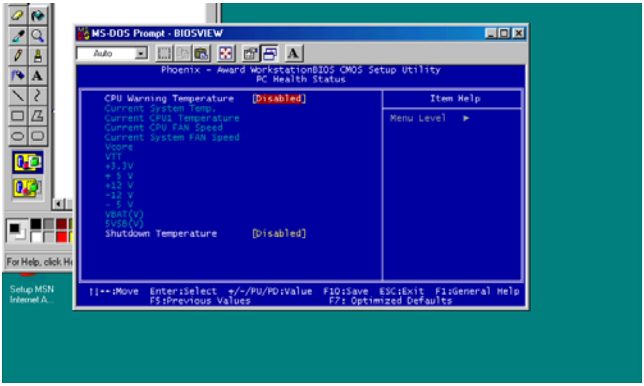


Figure 4.8: PC Health Status

4.2.9 Frequency/Voltage Control

By choosing the Frequency/Voltage Control option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-9581.

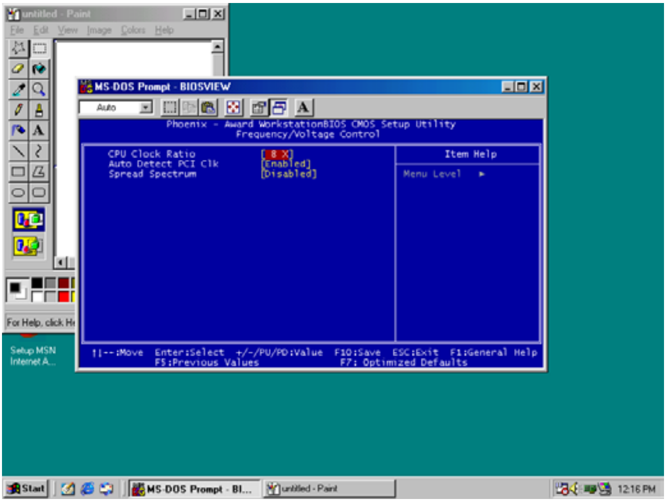


Figure 4.9: Frequency/Voltage Control

Caution! *Incorrect settings in Frequency/Voltage Control may damage the system CPU, video adapter, or other hardware.*

4.2.10 Load Optimized Defaults

Load Optimized Defaults loads the default system values directly from ROM. If the stored record created by the Setup program should ever become corrupted (and therefore unusable), these defaults will load automatically when you turn the PCM-9581 Series system on.

4.2.11 Set Password

Note! *To enable this feature, you should first go to the Advanced BIOS Features menu, choose the Security Option, and select either Setup or System, depending on which aspect you want password protected. Setup requires a password only to enter setup. System requires the password either to enter setup or to boot the system.*

A password may be at most 8 characters long.

To Establish Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see "Enter Password," enter the desired password and press <Enter>.
3. At the "Confirm Password" prompt, retype the desired password, then press <Enter>.
4. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

To Change Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see "Enter Password," enter the existing password and press <Enter>.
3. You will see "Confirm Password." Type it again, and press <Enter>.
4. Select Set Password again, and at the "Enter Password" prompt, enter the new password and press <Enter>.
5. At the "Confirm Password" prompt, retype the new password, and press <Enter>.
6. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

To Disable Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see “Enter Password,” enter the existing password and press <Enter>.
3. You will see “Confirm Password.” Type it again, and press <Enter>.
4. Select Set Password again, and at the “Enter Password” prompt, don’t enter anything; just press <Enter>.
5. At the “Confirm Password” prompt, again don’t type in anything; just press <Enter>.
6. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

4.2.12 Save & Exit Setup

If you select this option and press <Y> then <Enter>, the values entered in the setup utilities will be recorded in the chipset’s CMOS memory. The microprocessor will check this every time you turn your system on and use the settings to configure the system. This record is required for the system to operate.

4.2.13 Exit Without Saving

Selecting this option and pressing <Enter> lets you exit the Setup program without recording any new values or changing old ones.

CHAPTER 5

PCI Graphic

Introduction

Installation of PCI Graphic drivers

-for Windows 98/2000/XP

Further information

Chapter 5 PCI Graphic Setup

5.1 Introduction

The PCM-9581 has an onboard PCI/AGP flat panel/VGA interface. The specifications and features are described as follows:

5.1.1 Chipset

The PCM-9581 uses a Intel 855GME + Chrontel 7009 chipset for its graphic controller. It supports LVDS LCD displays, conventional analog CRT monitors, DVI connection, and TV-out function.

5.1.2 Display memory

The 855GME chip can support up to 8MB dynamic frame buffer shared with system memory; the VGA controller can drive CRT displays up to 1600 x 1200 at 85-Hz and 2048 x 1536 at 75-Hz, color panel displays in LVDS model with resolutions up to UGXA panel resolution with frequency range from 25 MHz to 112 MHz, or DVI model at a pixel resolution up to 1600 x 1200 at 85 Hz.

5.1.3 Display types

CRT and panel displays can be used simultaneously. The PCM-9581 can be set in one of six configurations: CRT only, LVDS only, both CRT and LFP (LVDS), EFP (DVO to DVI), TV, both CRT and EFP (DVO to DVI). The system is initially set to simultaneous display mode - CRT and LFP (LDVS). If you want to enable other display mode, please set up manually. Set up example is shown as in the following chapters.

5.1.4 Dual/Simultaneous Display

The PCM-9581 uses a Intel 855GME Chrontel 7017 controller that is capable of providing simultaneous dual view display of the same content on a flat panel and CRT.

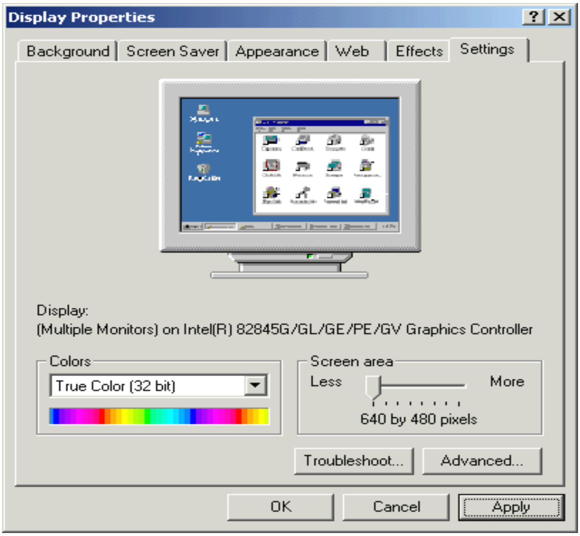
To set up dual view (simultaneous mode) under Windows 9x, Windows ME, Windows NT/2000/XP, follow these steps:

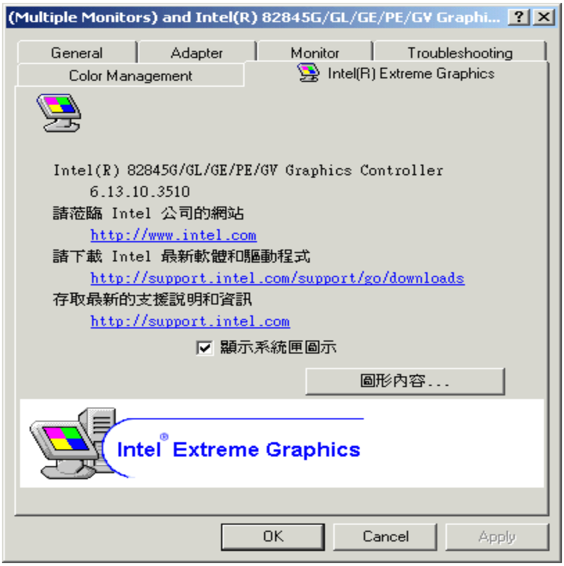
Step 1. Open the Control panel, and select “Display”, “Settings”.

Step 2. Select "Advanced."

Step 3. Select "Graphic Properties."

Step 4. Select "Devices" mode and click "OK".


Display Properties
Background
Screen Saver
Appearance
Web
Effects
Settings
Display:
(Multiple Monitors) on Intel(R) 82845G/GL/GE/PE/GV Graphics Controller
Colors
True Color (32 bit)
Screen area
Less
More
640 by 480 pixels
Troubleshoot...
Advanced...
OK
Cancel
Apply


(Multiple Monitors) and Intel(R) 82845G/GL/GE/PE/GV Graphi...
General
Adapter
Monitor
Troubleshooting
Color Management
Intel(R) Extreme Graphics
Intel(R) 82845G/GL/GE/PE/GV Graphics Controller
6.13.10.3510
請蒞臨 Intel 公司的網站
http://www.intel.com
請下載 Intel 最新軟體和驅動程式
http://support.intel.com/support/go/downloads
存取最新的支援說明和資訊
http://support.intel.com
顯示系統匣圖示
圖形內容...
Intel® Extreme Graphics
OK
Cancel
Apply

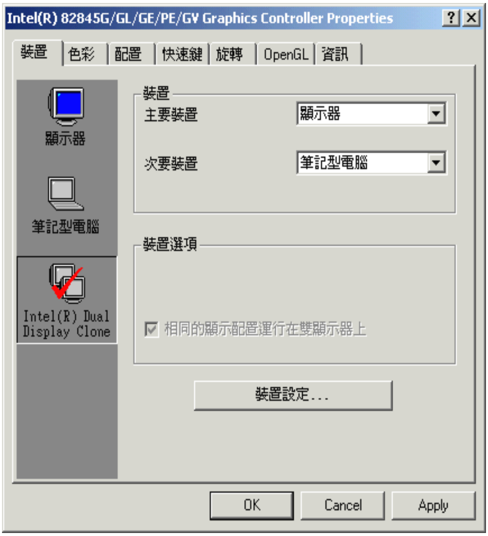


Figure 5.1: Selecting Display Settings

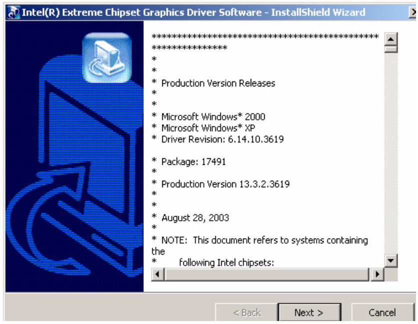
5.2 Installation of the PCI Graphic driver

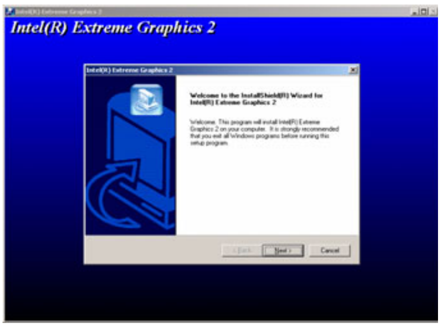
Complete the following steps to install the PCI graphic driver. Follow the procedures in the flow chart that apply to the operating system that you are using within your PCM-9581.

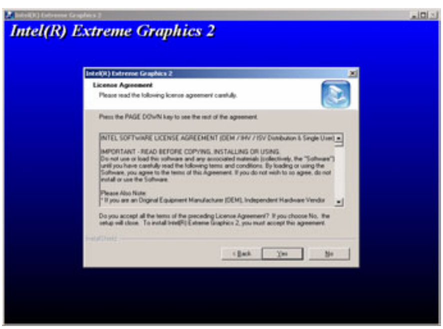
Notes! *1. The windows illustrations in this chapter are intended as examples only. Please follow the listed steps, and pay attention to the instructions which appear on your screen.*
2. For convenience, the CD-ROM drive is designated as "D" throughout this chapter.

5.2.1 Installation for Windows 98/ME/2000/XP

To install PCI Graphic driver for Windows 98/2000/XP, please run the set up wizard "Intel Extreme Graphic 2" in CD-ROM. Example of installation steps is shown as bellow:

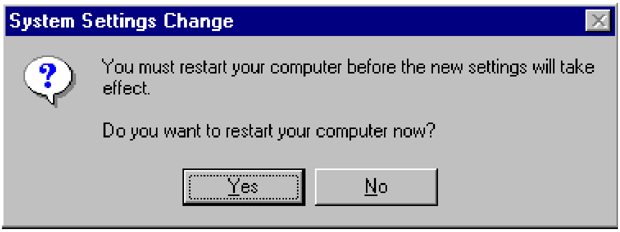

Intel(R) Extreme Chipset Graphics Driver Software - InstallShield Wizard
* Production Version Releases
* Microsoft Windows* 2000
* Microsoft Windows* XP
* Driver Revision: 6.14.10.3619
* Package: 17491
* Production Version 13.3.2.3619
* August 28, 2003
* NOTE: This document refers to systems containing the
following Intel chipsets:
< Back
Next >
Cancel


Intel(R) Extreme Graphics 2
Intel(R) Extreme Graphics 2
Welcome to the InstallShield(R) Wizard for Intel(R) Extreme Graphics 2
Welcome. This program will install Intel(R) Extreme Graphics 2 on your computer. It is strongly recommended that you exit all Windows programs before running this setup program.
Next >
Cancel


Intel(R) Extreme Graphics 2
Intel(R) Extreme Graphics 2
License Agreement
Please read the following license agreement carefully.
Press the PAGE DOWN key to see the rest of the agreement.
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor
Do you accept all the terms of the preceding License Agreement? If you choose No, the setup will close. To install Intel(R) Extreme Graphics 2, you must accept this agreement.
< Back
Yes
No



Press “Yes” to reboot.



5.3 Further Information

For further information about the AGP/VGA installation in your PCM-9581, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

Advantech websites: www.advantech.com

www.advantech.com.tw

CHAPTER 6

Audio Setup

The PCM-9581F is equipped with an audio interface that records and plays back CD-quality audio. This chapter provides instructions for installing the software drivers included on the audio driver diskettes.

Chapter 6 Audio Setup

6.1 Introduction

The PCM-9581's on-board audio interface provides high-quality stereo sound and FM music synthesis (ESFM) by using the Intel ICH4 audio controller. The audio interface can record, compress, and play back voice, sound, and music with built-in mixer control.

6.2 Driver installation

6.2.1 Before you begin

Please read the instructions in this chapter carefully before you attempt installation. The audio drivers for the PCM-9581 board are located on the audio driver CD. Run the supplied SETUP program to install the drivers; don't copy the files manually.

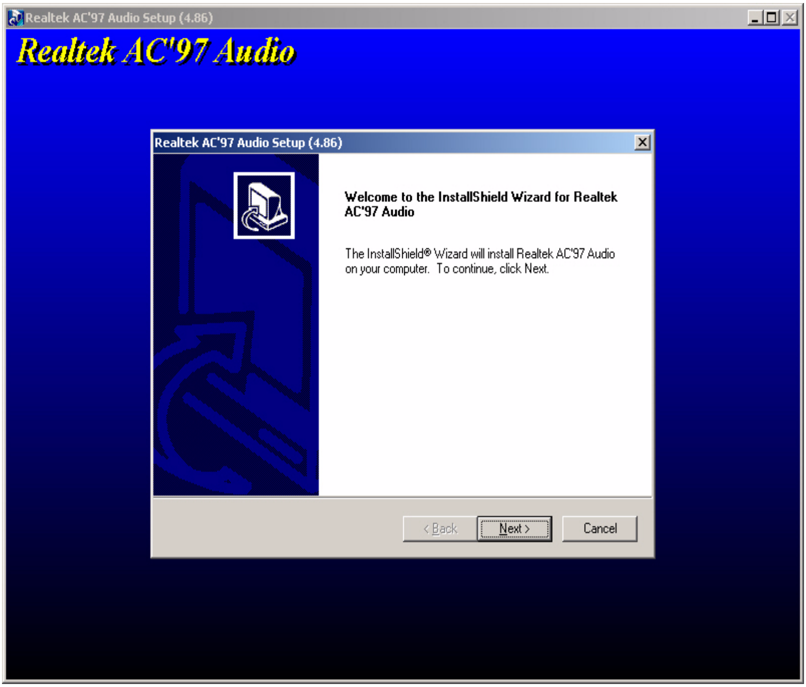
Note: *1. Before trying to install the driver, go to Chapter 3 to use the "Chipset Software*

Installation Utility " first.

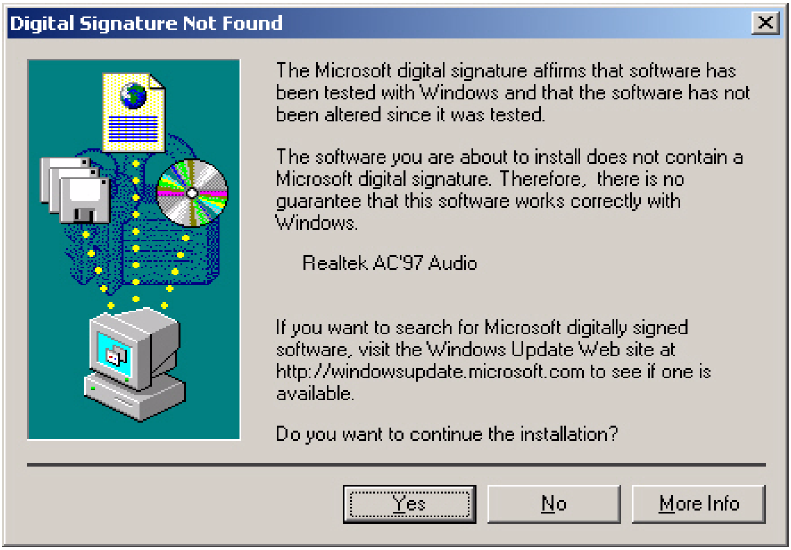
2. The files on the software installation diskette are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied SETUP program to install the drivers.

6.2.2 Windows 9x/2000/Me/XP drivers

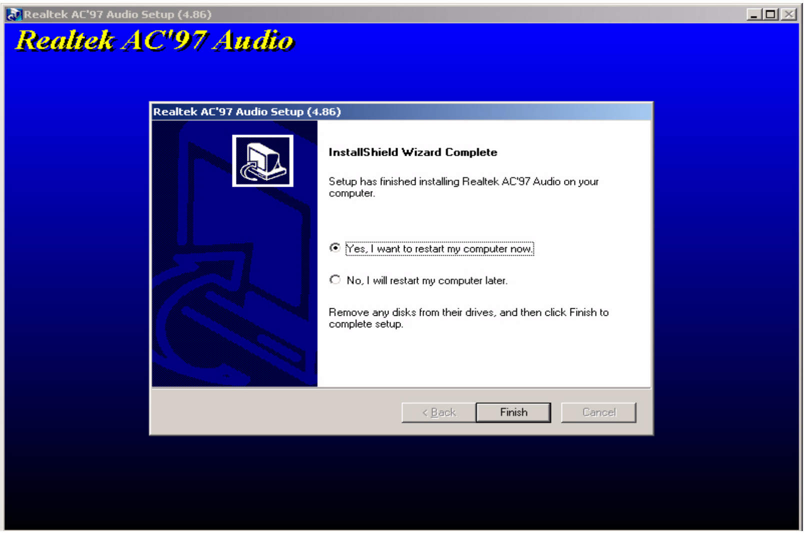
Step 1. To install Audio driver for Windows 98/2000/XP, please run the set up wizard "Install Shield Wizard for Realtek AC'97 Audio" in CD-ROM. Example of installation steps is shown as bellow.



Step 2. In the Hardware Update Wizard window, click "Next".



Step 3. In the following Hardware Update Wizard window, click "Finish" for Windows to complete audio driver installation.



CHAPTER 7

LAN Configuration

- Introduction
- Features
- Installation of Ethernet Driver for
  - Windows 2000 Drivers Setup Steps
  - Windows NT Drivers Setup Steps
  -Windows Wake-on-LAN Setup

Chapter 7 PCI Bus Ethernet Interface

7.1 Introduction

The PCM-9581F is equipped with a high-performance 32-bit Ethernet chipset which is fully compliant with IEEE 802.3 100 Mbps CSMA/CD standards. It is supported by major network operating systems. It is also both 100Base-T and 10Base-T compatible.

7.2 Features

- Intel 82551 10/100Base-T Ethernet LAN controller
- Optional Intel 82540 10/100/1000 Base-T Ethernet LAN controller
- Supports Wake-on-LAN remote control function.
- PCI Bus Master complies with PCI Rev. 2.2
- Complies with 100Base-TX, and 10Base-T applications.
- Single RJ-45 connector gives auto-detection of 10 Mbps or 100 Mbps network data transfer rates and connected cable types.
- Enhancements on ACPI & APM.
- Complies with PCI Bus Power Management Interface Rev. 1.1,
- ACPI Rev. 2.0, and Device Class Power Management Rev. 1.0.

7.3 Installation of Ethernet Driver

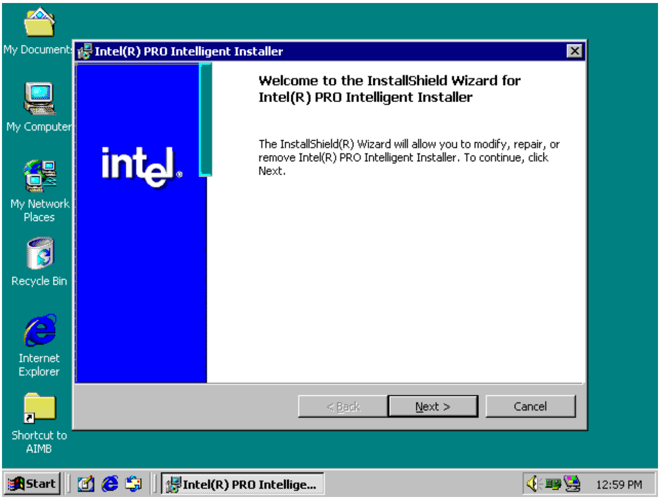
Before installing the Ethernet driver, note the procedures below. You must know which operating system you are using in your PCM-9581, and then refer to the corresponding installation procedure. Then just follow the steps described. You will quickly and successfully complete the installation, even if you are not familiar with instructions for Windows.

Note: The windows illustrations in this chapter are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

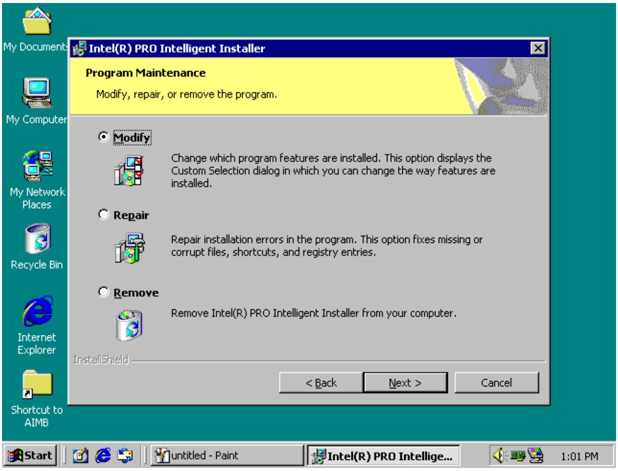
7.3.1 Installation for Windows 2000

Note: The CD-ROM drive is designated as "D" throughout this section.

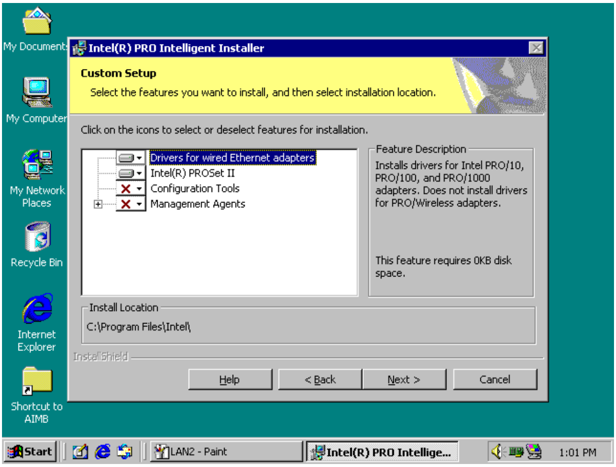
1. Click "Setup" icon in path "D:\BISCUIT\9581\LAN\"



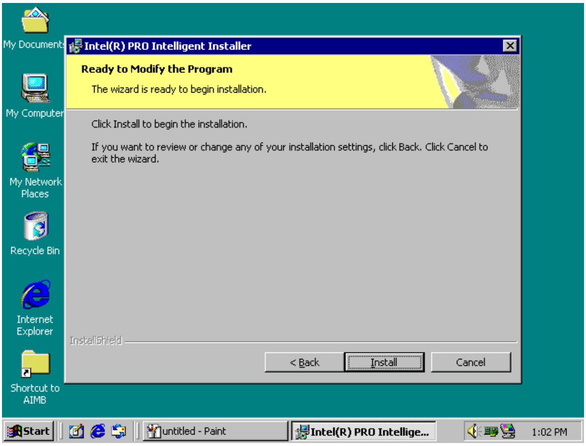
2. Choose "Modify" item and click "Next" to go next step.



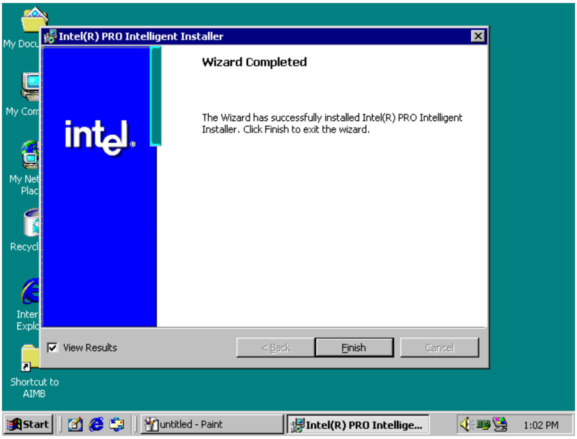
3. Highlight "Drivers for wired Ethernet adapters" and click "Next".



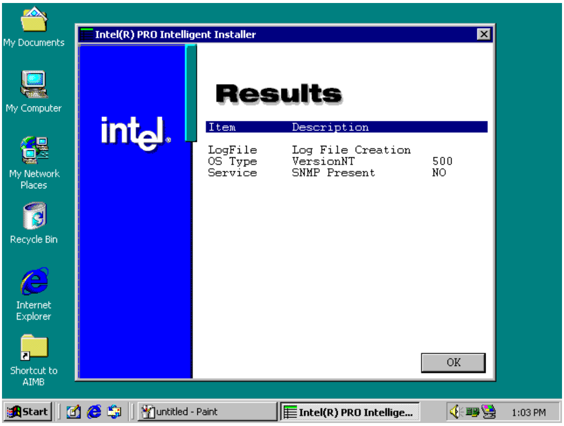
4. Click "Install" to begin the installation.



5. Click "Finish" to exit the wizard.

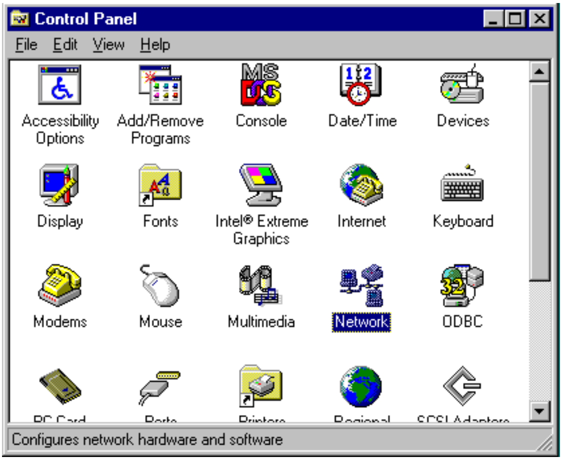


6. Then the Installer will show the result after driver installed.



7.3.2 Installation for Windows NT

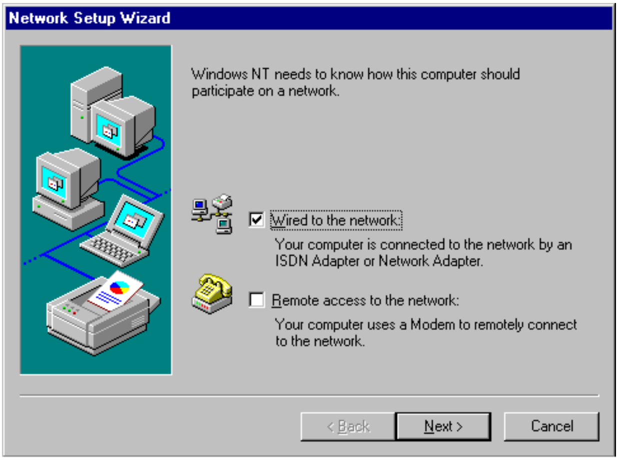
1. Select "Start", "Settings", "Control Panel" and double click "Network" icon.



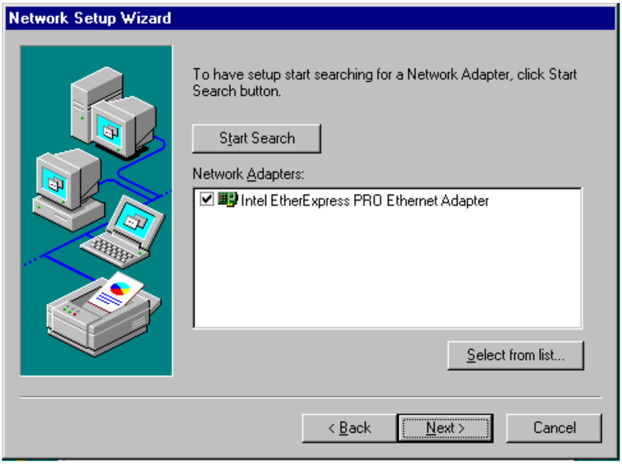
2. Then this menu will show on the screen. And click "Yes" to install network driver.



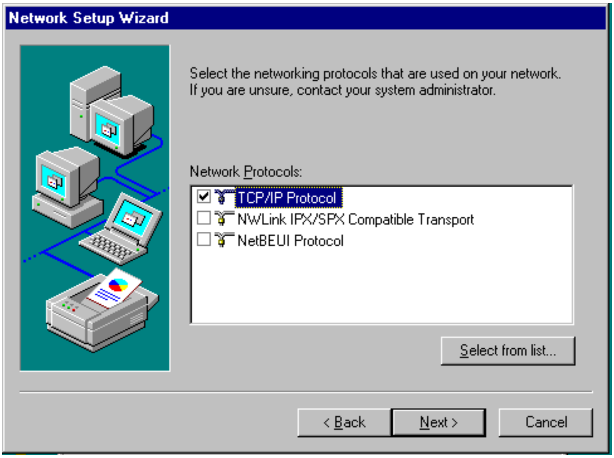
3. Select "Wired to the network" and click "Next"

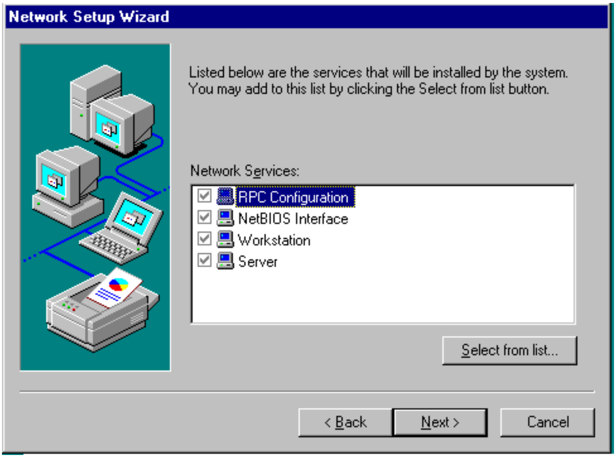


4. Click "Start Search" to search a Network Adapter. Then click "Next" to go next step

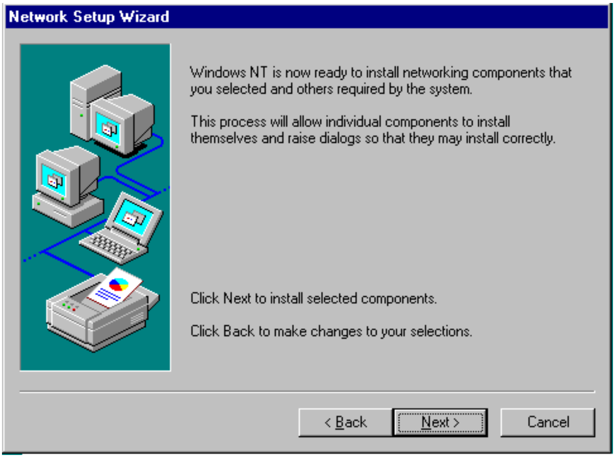


5. Base on current network environment to modify the Network Protocol then Click "Next"

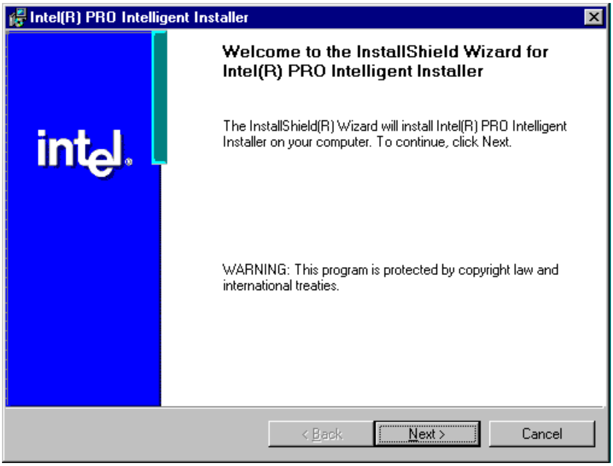




6.Click "Next" to go to next step



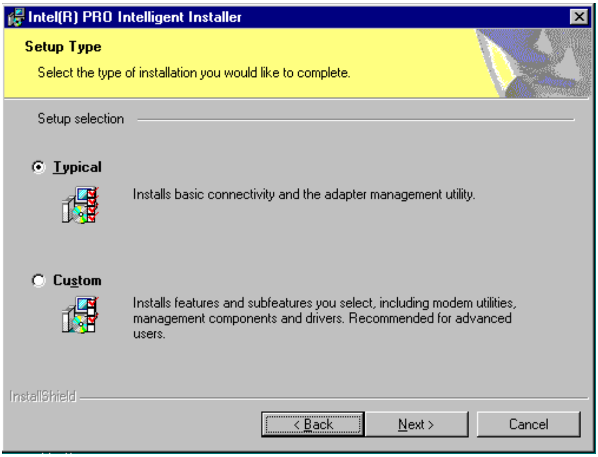
7. Click "Next" to install Network Adapter driver.



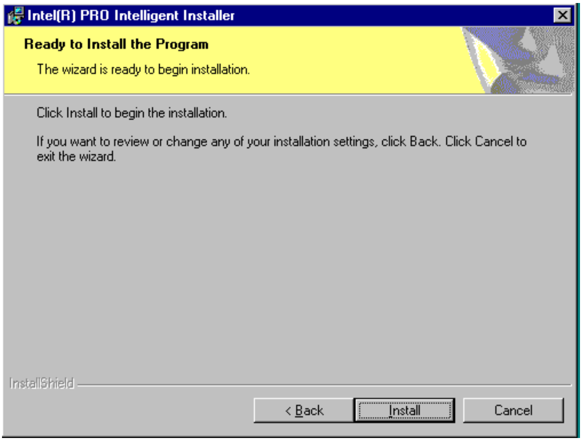
8. Check the License Agreement first then select "I accept the terms in the license agreement" and click "Next".



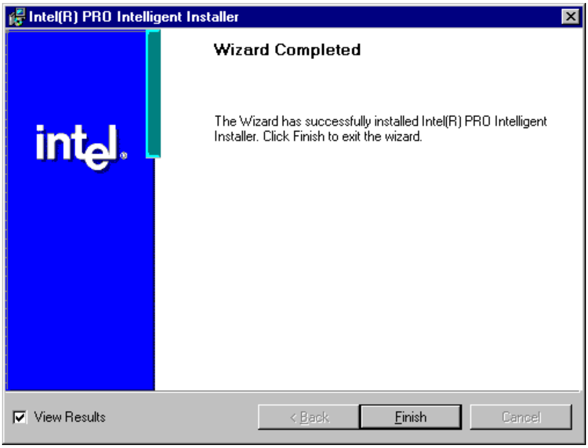
9. Select "Typical" and Click "Next".



10. Click "Install" to start to install driver.



11. Click "Finish" to finish install driver.



7.4 Further information

Intel website: www.intel.com

Advantech websites: www.advantech.com

www.advantech.com.tw

Appendix A

Programming the GPIO and Watchdog Timer

The PCM-9581 is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for any reason. This feature ensures system reliability in industrial standalone or unmanned environments.

Appendix A Prog. GPIO & W'dog Timer

A.1 Supported GPIO Register

Bellow are detailed description of the GPIO addresses and programming sample.

A.1.1 GPIO Registers

CRF0 (GP10-GP17 I/O selection register. Default 0xFF)

When set to a '1', respective GPIO port is programmed as an input port.

When set to a '0', respective GPIO port is programmed as an output port.

CRF1 (GP10-GP17 data register. Default 0x00)

If a port is programmed to be an output port, then its respective bit can be read/written.

If a port is programmed to be an input port, then its respective bit can only be read.

CRF2 (GP10-GP17 inversion register. Default 0x00)

When set to a '1', the incoming/outgoing port value is inverted.

When set to a '0', the incoming/outgoing port value is the same as in data register.

Extended Function Index Registers (EFIRs)

The EFIRs are write-only registers with port address 2Eh or 4Eh on PC/AT systems.

Extended Function Data Registers (EFDRs)

the EFDRs are read/write registers with port address 2Fh or 4Fh on PC/AT systems.

A.1.2 GPIO Example program-1

```
-----------------------------------------------
 Enter the extended function mode
-----------------------------------------------
MOV DX,4EH
MOV AL,87H
OUT DX,AL
OUT DX,AL
---------------------------------------------------------------
Set GPIO multiplexed pin selection register
---------------------------------------------------------------
MOV DX,4EH
MOV AL,2AH
OUT DX,AL
MOV DX,4FH
IN AL,DX
OR AL,FCH; Keep bit 0 and bit 1 no change
OUT DX,AL
---------------------------------------------------------------
Choose the logic device 7
---------------------------------------------------------------
MOV DX,4EH
MOV AL,7H
OUT DX,AL
MOV AL,4FH
MOV AL,7H
OUT DX,AL
---------------------------------------------------------------
Active the logic device
---------------------------------------------------------------
MOV DX,4EH
MOV AL,30H
```

```
OUT DX,AL
MOV DX,4FH
MOV AL,1H
OUT DX,AL
-----------------------------------------------------------
Set GPIO10-GPIO17 register input or output
-----------------------------------------------------------
MOV DX,4EH
MOV AL,F0H
OUT DX,AL
MOV DX,4FH
MOV AL,00H; 00000000b: 0 output 1 input
OUT DX,AL
-----------------------------------------------------------
Set GPIO10-GPIO17 inversion register
-----------------------------------------------------------
MOV DX,4EH
MOV AL,F2H
OUT DX,AL
OUT DX,4FH
MOV AL,00H; 0 the incoming/outgoing port value is the same as in data
register 1 input
OUT DX,AL; 1 the incoming/outgoing value is inverted
-----------------------------------------------------------
Set GPIO10-GPIO17 data register
-----------------------------------------------------------
MOV DX,4EH
MOV AL,F1H
OUT DX,AL
MOV DX,4FH
```

MOV AL,VALUE; if a port is programmed to be an output port, then its respective bit can be

READ/WRITTEN

OUT DX,AL; if a port is programmed to be an output port, then its respective bit can be

READ

Exit extended function mode

MOV DX,4EH

MOV AL,AAH

OUT DX,AL

A.2 Watchdog programming

Bellow is a sample of programming code for controlling the Watchdog Timer function.

```
--------------------------------------------------------------------------------
Enter the extended function mode, interruptible double-write |
--------------------------------------------------------------------------------
MOV DX,2EH
MOV AL,87H
OUT DX,AL
OUT DX,AL
--------------------------------------------------------------------------
 Configured logical device 8, configuration register CRF6 |
--------------------------------------------------------------------------
MOV DX,2EH
MOV AL,07H; point to Logical Device Number Reg.
OUT DX,AL
MOV DX,2FH
MOV AL,08H; select logical device 8
OUT DX,AL;
MOV DX,2EH
MOV AL,30H;Set watch dog activate or inactivate
OUT DX,AL
MOV DX,2FH
MOV AL,01H; 01:activate 00:inactivate
OUT DX,AL;
MOV DX,2EH
MOV AL,F5H; Setting counter unit is second
OUT DX,AL
MOV DX,2FH
MOV AL,00H
OUT DX,AL;
```

```
MOV DX,2EH
MOV AL,F6H
OUT DX,AL
MOV DX,2FH
MOV AL,05H; Set 5 seconds
OUT DX,AL
;-----------------------------------------
; Exit extended function mode |
;-----------------------------------------
MOV DX,2EH
MOV AL,AAH
OUT DX,AL
```

Appendix B

Pin Assignments

This appendix provides specialized information regarding:

- CPU Fan Power Connector
- Ethernet 10/100Base-T Connector
- Ethernet 100/1000Base-T Connector
- Ethernet LED Connector
- Audio Connector
- CD-IN Connector
- ATX Main Power Connector
- Keyboard and PS/2 Mouse Connector
- Floppy Drive Connector
- IDE (1st and 2nd) HDD Connector
- Parallel Port Connector
- Front Panel LED
- USB Connector
- SIR Connector
- TV-out Connector
- Backlight Connector
- CRT Display Connector
- LVDS Connector
- COM Port Connector
- CompactFlash Card Connector
- 8 bit GPIO Connector
- TMDS Connector
- Mini-PCI Connector
- Added Card Power Connector

Appendix B Pin Assignments

B.1 CPU Fan Connector (CN10)

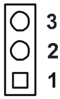


Table B.1: CPU Fan Connector (CN10)	
PIN	**Signal**
1	GND
2	+12V
3	SPEED DETECT

B.2 Ethernet 10/100Base-T Connector (CN23)

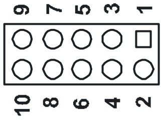


Table B.2: Ethernet 10/100Base-T Connector (CN23)	
PIN	**Signal**
1	VCC_LAN
2	ACTLED
3	RX+
4	RX-
5	LILED
6	GND
7	N/C
8	GND
9	TX+
10	TX-

B.3 Ethernet 10/100/1000Base-T Connector (CN2)

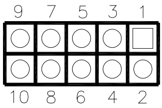


Table B.3: Ethernet 10/100/1000Base-T Connector (CN2)

PIN	Signal
1	NC
2	NC
3	RJ45 PIN7
4	RJ45 PIN8
5	RJ45 PIN4
6	RJ45 PIN5
7	RJ45 PIN3
8	RJ45 PIN6
9	RJ45 PIN1
10	RJ45 PIN2

B.4 Ethernet LED Connector (CN1)

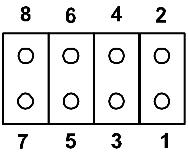


Table B.4: Giga bit Ethernet LED (CN1)

PIN	Signal
1	VCC
2	GND
3	LINK
4	ACT
5	LINK100
6	LINK1000
7	NC
8	NC

B.5 ACLink audio Connector (CN14)

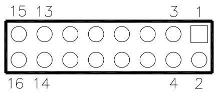


Table B.5: Audio Connector (CN14)			
PIN	**Signal**	**PIN**	**Signal**
1	SPK_R+	2	SPK_R-
3	SPK_L+	4	SPK_L-
5	LOUT_R	6	LOUT_L
7	GND	8	GND
9	LIN_R	10	LIN_L
11	GND	12	GND
13	NC	14	NC
15	MIC	16	GND

B.6 CD-IN Connector (CN18)

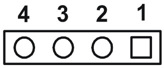


Table B.6: CD-IN Connector (CN18)	
PIN	**Signal**
1	CD_L
2	GND
3	GND
4	CD_R

B.7 ATX Main Power Connector (CN15)

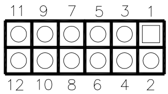


Table B.7: ATX Power Connector (CN15)			
PIN	**Signal**	**PIN**	**Signal**
1	GND	2	GND
3	5 V	4	GND
5	5 V	6	5VSB
7	GND	8	PS-ON#
9	5 V	10	GND
11	5 V	12	12 V

B.8 Keyboard and PS/2 Mouse Connector (CN19)

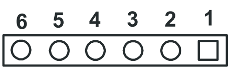


Table B.8: Keyboard and Mouse Connector (CN19)	
PIN	**Signal**
1	KB CLOCK
2	KB DATA
3	MS CLOCK
4	GND
5	+5V
6	MS DATA

B.9 Floppy Disk Drive Connector (CN8)

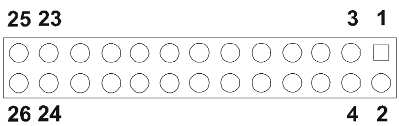
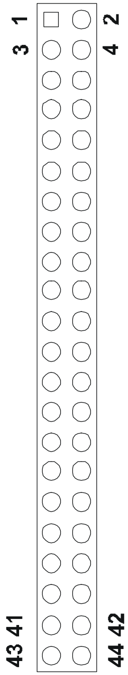


Table B.9: Floppy Disk Drive Connector (CN8)			
PIN	**Signal**	**PIN**	**Signal**
1	Vcc (5 V)	2	INDEX
3	Vcc (5 V)	4	DRIVE SELECT 0
5	Vcc (5 V)	6	DISK CHANGE
7	NC	8	NC (READY)
9	NC (HD OUT)	10	MOTOR ON
11	NC	12	DIRECTION SELECT
13	NC (1.6 MB IN)	14	STEP
15	GND	16	WRITE DATA
17	GND	18	WRITE GATE
19	GND	20	TRACK 00
21	GND	22	WRITE PROTECT
23	GND	24	READ DATA
25	GND	26	SIDE SELECT

B.10 IDE Hard Drive Connector (CN5)

Table B.10: IDE HDD Connector (CN5)

PIN	Signal	PIN	Signal
1	Reset	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	N/C
21	DRQ	22	GND
23	DIOW	24	GND
25	DIOR	26	GND
27	IORDY	28	N/C
29	DACK	30	GND
31	IDE IRQ	32	IOCS16
33	ADDR 1	34	N/C
35	ADDR 0	36	ADDR 2
37	HD SELECT0	38	HD SELECT 1
39	IDE ACTIVE*	40	GND
41	VCC	42	VCC
43	GND	44	N/C

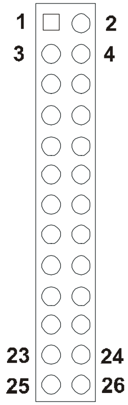


B.11 Parallel Port Connector (CN4)

Table B.11: Parallel Port Connector (CN4)

PIN	Signal	PIN	Signal
1	STROBE*	2	AUTOFD*
3	D0	4	ERR
5	D1	6	INIT*
7	D2	8	SLCTINI*
9	D3	10	GND
11	D4	12	GND
13	D5	14	GND
15	D6	16	GND
17	D7	18	GND
19	ACK*	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	N/C

* low active



B.12 Front Panel LED (CN3)

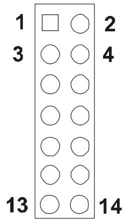


Table B.12: Front Panel LED (CN3)			
PIN	**Signal**	**PIN**	**Signal**
1	HDD LED	2	HDD LED -
3	Power LED+	4	POWER LED-
5	SUS LED+	6	SUS LED-
7	LAN ACT+	8	LAN ACT-
9	LAN Link +	10	LAN Link -
11	PWR BTN+	12	PWR BTN-
13	RESET+	14	RESET-

B.13 USB Connector (CN25, CN26, CN27)

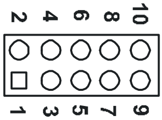


Table B.13: USB Connector (CN25, CN26, CN27)			
PIN	**Signal**	**PIN**	**Signal**
1	+5 V	2	+5 V
3	UV0-/2-/4-	4	UV1-/3-/5-
5	UV0+/2+/4+	6	UV1+/3+/5+
7	GND	8	GND
9	GND	10	N/C

B.14 SIR Connector (CN24)

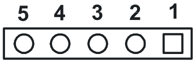


Table B.14: SIR Connector (CN24)			
PIN	**Signal**	**PIN**	**Signal**
1	+5V	3	IRRX
2	NC	4	GND
5	IRTX		

B.15 TV-Out Connector (CN12)

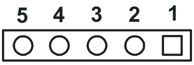


Table B.15: TV-Out Connector (CN12)	
PIN	**Signal**
1	Y
2	C
3	GND
4	GND
5	CVBS

B.16 LCD Inverter Backlight Connector (CN17)

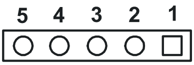


Table B.16: LCD Inverter Backlight Connector (CN17)	
PIN	**Signal**
1	+12 V
2	GND
3	ENABKL
4	VBR
5	+5 V

B.17 CRT Display Connector (CN13)

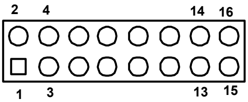


Table B.17: CRT Display Connector (CN13)			
PIN	**Signal**	**PIN**	**Signal**
1	RED	3	DDC POWER(+5V)
2	GREEN	4	GND
5	BLUE	6	N/C
7	N/C	8	DDC DATA
9	GND	10	H-SYNC
11	GND	12	V-SYNC
13	GND	14	DDC CLOCK
15	GND	16	N/C

B.18 LVDS Connector (CN16)

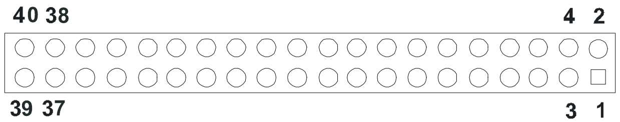


Table B.18: LVDS Connector (CN16)			
PIN	**Signal**	**PIN**	**Signal**
1	LCD VDD (+3.3V)	2	LCD VDD (+3.3V)
3	GND	4	GND
5	LCD VDD (+3.3V)	6	LCD VDD (+3.3V)
7	OD0-	8	ED0-
9	OD0+	10	ED0+
11	GND	12	GND
13	O31-	14	ED1-
15	OD1+	16	ED1+
17	GND	18	GND
19	OD2-	20	ED2-
21	OD2+	22	ED2+
23	GND	24	GND
25	OCK-	26	ECK-
27	OCK+	28	ECK+
29	GND	30	GND
31	DDC_CLK	32	DDC_DAT
33	GND	34	GND
35	OD3-	36	ED3-
37	OD3+	38	ED3+
39	NC	40	VCON

B.19 COM Port Connector (CN11)

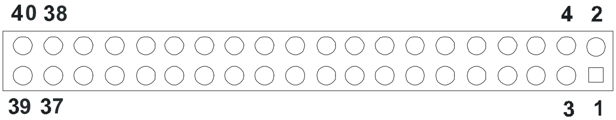


Table B.19: COM Port Connector (CN11)			
PIN	**Signal**	**PIN**	**Signal**
1	COM1 DCD	2	COM1 DSR
3	COM1 RX	4	COM1 RTS
5	COM1 TX	6	COM1 CTS
7	COM1 DTR	8	COM1 RI
9	GND	10	GND
11	COM2 DCD/485TX-	12	COM2 DSR
13	COM2 RX /485TX+	14	COM2 RTS
15	COM2 TX /485RX+	16	COM2 CTS
17	COM2 DTR/485RX-	18	COM2 RI
19	GND	20	GND
21	COM3 DCD	22	COM3 DSR
23	COM3 RX	24	COM3 RTS
25	COM3 TX	26	COM3 CTS
27	COM3 DTR	28	COM3 RI
29	GND	30	GND
31	COM4 DCD	32	COM4 DSR
33	COM4 RX	34	COM4 RTS
35	COM4 TX	36	COM4 CTS
37	COM4 DTR	38	COM4 RI
39	GND	40	GND

B.20 CompactFlash Card Connector (CN20)

Table B.20: CompactFlash Card Connector (CN20)

PIN	Signal	PIN	Signal
1	GND	2	SDD3
3	SDD4	4	SDD5
5	SDD6	6	SDD7
7	SDCS#1	8	GND
9	GND	10	GND
11	GND	12	GND
13	+5V	14	GND
15	GND	16	GND
17	GND	18	SDA2
19	SDA1	20	SDA0
21	SDD0	22	SDD1
23	SDD2	24	NC
25	NC	26	NC
27	SDD11	28	SDD12
29	SDD13	30	SDD14
31	SDD15	32	SDCS#3
33	NC	34	SDIOR
35	SDIOW	36	+5V
37	IRQ15	38	+5V
39	CSEL	40	NC
41	IDERST	42	SDIORDY
43	NC	44	+5V
45	SDDASP	46	S66DET
47	SDD8	48	SDD9
49	SDD10	50	GND

B.21 GPIO Connector (CN9)

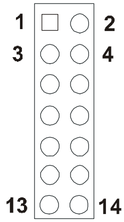


Table B.21: GPIO Connector (CN9)

PIN	Signal
1	GPIO0
2	GPIO4
3	GND
4	GND
5	GPIO1
6	GPIO5
7	VCC
8	NC
9	GPIO2
10	GPIO6
11	GND-
12	GND
13	GPIO3
14	GPIO7

B.22 TMDS Connector (CN7)

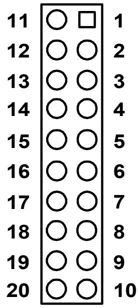


Table B.22: TMDS Connector (CN7)

PIN	Signal	PIN	Signal
1	C0-	2	VCC
3	C0+	4	CK-
5	GND	6	CK+
7	C1-	8	GND
9	C1+	10	DVI_CLK
11	GND	12	DVI_DATA
13	C2-	14	HP_DET
15	C2+	16	MI2C DATA
17	VCC	18	MI2C CLK
19	NC	20	NC

B.23 Mini PCI Connector (CN22)

Table B.23: Mini PCI Connector (CN22)

PIN	Signal	PIN	Signal
1	TIP Key	2	RING Key
3	8PMJ-33, 4	4	8PMJ-13, 4
5	8PMJ-63, 4	6	8PMJ-23, 4
7	8PMJ-73, 4	8	8PMJ-43, 4
9	8PMJ-83, 4	10	8PMJ-53, 4
11	LED1_GRNP	12	LED2_YELP
13	LED1_GRNN	14	LED2_YELN
15	CHSGND	16	RESERVED
17	INTB#	18	5V
19	3.3V	20	INTA#
21	RESERVED	22	RESERVED
23	GROUND	24	3.3VAUX
25	CLK	26	RST#
27	GROUND	28	3.3V

B.24 Added Card Power Connector (CN30)

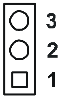


Table B.24: Added Card Power Connector (CN30)

PIN	Signal
1	-5 V
2	GND
3	-12 V

Appendix C

System Assignments

This Appendix contains information of a detailed nature: It includes:

- System I/O ports
- 1st MB memory map
- DMA channel assignments
- Interrupt assignments

Appendix C System Assignments

C.1 System I/O Ports

Table C.1: System I/O Ports

Addr.range (Hex)	Device
000-01F	DMA controller
020-021	Interrupt controller 1, master
040-05F	8254 timer
060-06F	8042 (keyboard controller)
070-07F	Real-time clock, non-maskable interrupt (NMI) mask
080-09F	DMA page register
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller
0F0	Clear math co-processor
0F1	Reset math co-processor
0F8-0FF	Math co-processor
1F0-1F8	Fixed disk
170- 178	Fixed disk (2nd IDE)
200-207	Reserved (Game I/O)
278-27F	Parallel printer port 2 (LPT 3)
2E8-2EF	Series port 4
2F8-2FF	Serial port 2
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT 2)
380-38F	SDLC, bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome display and printer adapter (LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/graphics monitor adapter
3E8-3EF	Series port 3

Table C.1: System I/O Ports	
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1

* PNP audio I/O map range from 220 ~ 250H (16 bytes)
  MPU-401 select from 300 ~ 330H (2 bytes)

C.2 1st MB memory map

Table C.2: 1st MB memory map

Addr.range (Hex)	Device
F0000h - FFFFFh	System ROM
*CC000h - EFFFFh	Unused (reserved for Ethernet ROM)
C0000h - CBFFFh	Expansion ROM (for VGA BIOS)
B8000h - BFFFFh	CGA/EGA/VGA text
B0000h - B7FFFh	Unused
A0000h - AFFFFh	EGA/VGA graphics
00000h - 9FFFFh	Base memory

* If Ethernet boot ROM is disabled (Ethernet ROM occupies about 16 KB)
* E0000 - EFFFF is reserved for BIOS POST

C.3 DMA channel assignments

Table C.3: DMA channel assignments

Channel	Function
0	Available
1	Reserved (audio)
2	Floppy disk (8-bit transfer)
3	Available (parallel port)
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

* Audio DMA select 1, 3, or 5

** Parallel port DMA select 1 (LPT2) or 3 (LPT1)

C.4 Interrupt assignments

Table C.4: Interrupt assignments	
Interrupt#	**Interrupt source**
IRQ 0	Interval timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 3	COM2
IRQ 4	COM1
IRQ 5	COM4
IRQ 6	FDD
IRQ 7	LPT1
IRQ 8	RTC
IRQ 9	Reserved (audio)
IRQ 10	COM3
IRQ 11	Reserved for watchdog timer
IRQ 12	PS/2 mouse
IRQ 13	INT from co-processor
IRQ 14	Primary IDE
IRQ 15	Secondary IDE for CFC

* Ethernet interface IRQ select: 9, 11, 15
* PNP audio IRQ select: 9, 11, 15
* PNP USB IRQ select: 9, 11, 15
* PNP ACPI IRQ select: 9, 11, 15

Appendix D

Optional Extras for the PCM-9581

Appendix D Optional Extras

The PCM-9581 requires several cables for normal operation. You can make them yourself or purchase an optional cable kit assembly, which includes the following:

D.1 PCM-10586-6100 Cable kit for PCM-9581F

Table D.1: PCM-10586-6100 Cable kit for PCM-9581F

Part No.	Cable Description	PCM-9581F Connector	Terminating Connector
1701100202	Network,100Base -T	CN23	RJ45 8-pin modular jack
1701260250	Parallel Port	CN4	25pin,female IDC (350 mm)
1701440350	2.5 and 1.8 IDE cable	CN5	44-pin,2mm,female IDC (350 mm)
1701400452	IDE cable	CN6	40-pin,2.54mm UDMA/66
1700000410	TMDS connector	CN7	CABLE DVI-26P/ DF13-20P 20CM
1701400181	COM 1~4 cable	CN11	40-ping,9-ping DSUB *4
1700160160	Audio cable	CN14	F 3.5mm 16-pin, 5 female phone jacks
1703060191	Keyboard and PS/2 mouse	CN19	5-pin circular DIN,6-pin circular DIN
1703100260	USB cable	CN25,26,27	10-pin,IDE 2.0mm, USB*2(26cm)
1906000001	FDD 26 Pin Connector	CN8	FPC for Slim-FDD 12cm
9681000044	26-34 pin FDD converter	CN8	PURCH 26-34 Pin FDD CABLE converter(+5v)
1701340603	FDD 34 pin cable	CN8	FLAT CABLE 34P 60cmFC34/34/ HOUSING34

- Optional TV-out cable P/N: 1703050306

- Optional USB cable 1703100121 (12cm)

D.2 PCM-10586-6A00 Cable kit for PCM-9581FG

Table D.2: PCM-10586-6A00 Cable kit for PCM-9581FG

Part No.	Cable Description	PCM-9581F Connector	Terminating Connector
1701100151	Network,1000 Base-T	CN2	RJ45 8-pin modular jack
1701260250	Parallel Port	CN4	25pin,female D-SUB
1701440350	2.5 and 1.8 IDE cable	CN5	44-pin, 2mm,female IDC (350mm)
1701400452	IDE cable	CN6	40-pin,2.54mm UDMA/66
1700000410	TMDS connector	CN7	CABLE DVI-26P/DF13-20P 20CM
1906000001	FDD 26 pin Connector	CN8	FPC for Slim-FDD 12cm
1701400181	COM1~4 cable	CN11	40-ping,9-ping DSUB*4
1701160101	VGA CRT cable	CN13	2*8-pin header (2mm),15-pin DSUB
1700160160	Audio cable	CN14	F 3.5mm 16-pin,5 female phone jacks
1703060191	Keyboard and PS/2 mouse	CN19	5-pin circular DIN,6-pin circular DIN
1703100260	USB cable	CN25,26,27	10-pin,IDE2.0mm, USB*2(26cm)
9681000044	26-34 pin FDD converter	CN8	PURCH 26-34 pin FDD CABLE converter(+5v)
1701340603	FDD 34 pin cable	CN8	FLAT CABLE 34P 60cmFC34/34/HOUSING34

- Optional TV-out cable P/N: 1703050306
- Optional USB cable 1703100121 (12cm)

D.3 Optional USB cable (CN25, CN26, CN27)

Optional USB cable (10-pin,26 cm)	Part no: 1703100260
Optional USB cable (10pin,12cm) for MBPC-300	Part no. 1703100121

D.4 ATX Power Control Cable (CN15)

part no.: 1700000265

Appendix E

Mechanical Drawings

Appendix E Mechanical Drawings

E.1 Mechanical Drawings

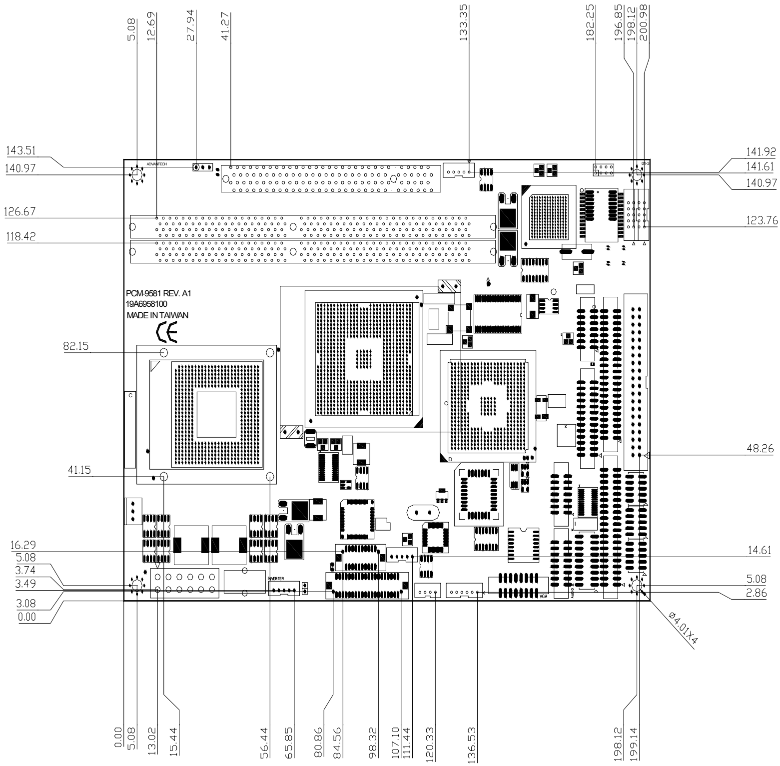


Figure E.1: PCM-9581 Mechanical Drawing (component side)

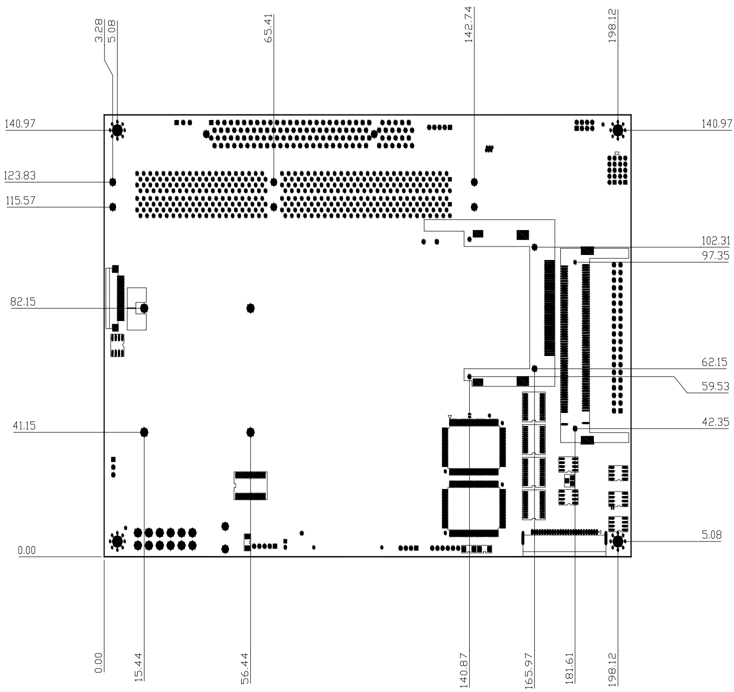


Figure E.2: PCM-9581 Mechanical Drawing (solder side)